

CropKing Business Plan

This document provides CropKing's hydroponic package costs for potential growers to project crop production and revenue. Local foods are one of the fastest-growing segments in agriculture and CropKing's hydroponic packages offer growers an opportunity to enter this expanding market. CropKing's current estimates of future performance are based on assumptions which are based on our experience with growers, but are certainly subject to location and market variation. Many variables, ranging from climate at location to crop management to pest and disease challenges, contribute to crop production. The sole purpose of the Business Plan is to assist a future grower in deciding how to proceed with a hydroponic business, and it is critical for growers to conduct their own independent analysis and investigation of their local market.

Projections for NFT Systems



The NFT system is used to grow small leafy greens, with the most common crops being bibb lettuce, romaine lettuce, and basil. Lettuce can be grown from seed to harvest in 40-60 days, depending on light levels, location, fertigation schedule, and crop management. For our projections, we estimate crops to mature from seed to harvest in an average of 47 days. In this rotation the crop will germinate and mature to transplant size (3-4 true leaves) in two weeks; this will take place in the lettuce nursery. The plant is then transplanted to the grow-out channels where they will mature until they reach a harvestable weight of 120-170 grams, or 4-6 ounces. Crop production will vary seasonally based on ambient light levels, with the most rapid production occurring through the summer solstice. The projections below are based on this crop cycling.

- Production costs
 - Seed \$0.02
 - Growing media \$0.03
 - Fertilizer \$0.03
 - (Crisper \$0.19)+(crisper box \$0.17) = \$0.36

- (lettuce liner \$0.01)+(bulk box \$0.15) = \$0.16
- Labor @ 1.5 min/ plant, \$10/hr
 - Total labor per plant \$0.26
 - **Total per plant (packaging averaged): \$0.60**
 - **EXCLUDES HEATING & ELECTRIC COSTS**

	30'x128' Quonset	44'x128' 2-Bay	88'x128' 4-Bay *1/4 acre	176'x128' 8-Bay *1/2 acre	352'x128' 16-Bay *1 acre
Sqft	3,840	5,632	11,264	22,528	45,056
Plant Positions	6,192	9,306	18,612	37,224	74,448
11-Turns annually (harvested plants)	68,112	102,366	204,732	409,464	818,928
Gross Revenue @ \$1.20/head 100% bulk packed	\$81,734	\$122,839	\$245,676	\$491,357	\$982,714
Gross Revenue @ \$1.60/head 100% in crisper	\$108,980	\$163,786	\$327,571	\$655,142	\$1,310,285

Prices as of Fall 2014

Seeds

Bibb- Rex, Flandria, Alexandria, Natalia, Gardia, Santoro, Skyphos (red), Teodore (red)

Prices range from \$94.20- \$114.55 per 5,000 seeds.

Romaine- Helvius, Salvius

Prices range from \$91.60- \$104.15 per 5,000 seeds.

Leaf/Lolla- Carmesi, Orville, Lozano

Prices range from \$109.15- \$119.65 per 5,000 seeds.

Oakleaf- Kireve, Rutilai

Prices range from \$100.40- \$113.40 per 5,000 seeds.

Growing Media

Rockwool AO25/40- 200 cubes per pad, 30 pads per case (ROC1004)

1-11 cases - \$186.96 per case

12-29 cases- \$172.17 per case

Oasis regular 162ct. single dibble bottom groove, 20 pads per case (OAS2500)

1-4 cases- \$92.50

5-9 cases- \$91.10

10-24 cases- \$89.05

Fertilizer

Components include calcium nitrate, potassium nitrate, mono-potassium phosphate, potassium sulfate, magnesium sulfate, and micro-mix. Battery-strength (28-32%) sulfuric acid is used to lower source water

pH to a target level. Most growers opt for a custom recipe, in which fertilizer requirements are calculated based on background nutrient levels.

Packaging

Lettuce Crisper, case of 420 crispers (CRI1000)

1-14 cases- \$83.94

15+ cases- \$78.95

Lettuce crisper box, 16"x24"x12", each box holds 12 lettuce crispers, 240 per pallet (BOX5000)

\$480 per pallet, \$2.00 per box

Lettuce Bulk Pack Box, 24"x16"x8.25", each box holds 20 heads of lettuce, 1,200 per pallet (BOX3000)

1200- \$3.00/box

1201-2400- \$2.90/box

White lettuce box liner, roll 500 (LIN0500)

1-9 rolls- \$123.65

10+ rolls- \$121.00

Labor includes seeding, transplanting, and harvesting, as well as crop maintenance. Distribution downstream of harvesting and packaging are not included in the labor estimate.

CropKing NFT Greenhouse Package

For over 30 years CropKing has been selling commercial packages to new entrants into the hydroponic business, as well as existing growers looking to expand and diversify. We offer packages in a range of sizes. The sizes and a breakdown of the material costs are listed below.

	30'x128' Quonset	44'x128' 2-Bay	88'x128' 4-Bay	176'x128' 8-Bay	352'x128' 16-Bay
Greenhouse Structure and Door	\$6,173	\$17,491	\$31,355	\$59,479	\$114,951
Greenhouse Covering	\$3,055	\$4,523	\$7,457	\$13,296	\$25,006
Cooling System	\$3,891	\$6,087	\$12,280	\$24,559	\$49,117
Power Vent Door	\$2,729	\$3,366	\$5,215	\$8,477	\$16,945
Air Circulation System	\$1,621	\$3,241	\$6,483	\$12,965	\$25,931
Overhead Unit Heaters	\$2,442	\$7,758	\$15,193	\$29,766	\$57,883
Environmental Controls	\$1,795	\$2,442	\$4,492	\$4,492	\$8,792
Electric Panel	\$1,695	\$1,985	\$2,925	\$4,865	\$9,730
Grower Tech Service Program	\$1,795	\$1,795	\$1,795	\$1,795	\$1,795
NFT Growing System	\$20,084	\$31,513	\$59,119	\$113,030	\$222,775
Testing & Miscellaneous Equip.	\$917	\$2,283	\$2,877	\$3,768	\$6,436
Growing Supplies (approx. 1 year)	\$4,637	\$6,969	\$13,803	\$27,044	\$53,610
CO2 Enrichment System	\$1,231	\$1,914	\$3,457	\$6,543	\$13,086
Grow Lights	\$14,338	\$17,298	\$52,194	\$104,159	\$208,318
Shade Cloth System	\$917	\$1,802	\$3,073	\$5,619	\$10,706
Environmental Control Software	\$995	\$995	\$995	\$995	\$995
Insect Exclusion System	\$2,593	\$4,299	\$6,764	\$12,816	\$22,728
Total with lighting	\$72,722	\$115,761	\$229,477	\$433,668	\$848,804

Additional Materials for CropKing NFT Greenhouse Package

Lumber & Hardware for Framing the Endwalls, the Cooling System
Concrete for Column Posts/Ground Stakes & Lettuce Tables
Gas Heater Plumbing, Vent Pipe
Interior Electrical Wiring Materials, wire Conduit
Perimeter Baseboard and Insulation
Walkway Concrete, Gravel, Drain Tile, Ground Cover, Forming Lumber, & Labor to Pour Concrete
Estimate Shipping Costs
Building Permits, Estimated
Site Preparation, Estimated
Gas and Water Hookup
Electric Hookup
Hot Water Heater
Packing Table, Picking Cart
Interior Plumbing for Sink, Material
Labor to Erect Greenhouse, \$3.50/sqft
Nutrient Tank to Bury, 1200 gallon per two bays (\$1400 ea.)
Labor for Electrical
Labor for Plumbing & Heating

*Costs vary depending on location and local costs.

CropKing Bato Bucket Projections



Vining crops are best produced in the Bato Bucket System, which has several advantages over the NFT system for growing large rooting and long term crops. The Bato buckets are 2.9 gallons which provides ample room for a large rooting crop such as tomatoes, and also holds excess nutrient solution in a reservoir at the bottom of the bucket. In northern climates, crops are seeded in late December or early January. The crop takes about 100 days from seed until the first cluster of fruit can be harvested. Once the plants have reached maturity they will yield 0.75-1.25 lbs of fruit per week for around 30 weeks, which will bear production from April to October. Production drops off in early fall and the cost to maintain the crop can exceed the revenue generated by salable fruit. Environmental stress, such as low light and high humidity during the changing seasons, can also contribute to plant health deterioration. Growers in southern climates typically grow through the winter months so their production peaks when field tomatoes are unavailable. Tomatoes are seeded in mid to late July, and the first cluster is harvested in early October. Often crops are left in the greenhouse through June.

- If plants are producing 40 lbs/ plant
 - Fertilizer \$0.08/lb
 - Perlite \$0.012/lb
 - Seed starter cube \$0.002/lb
 - Tomato seed \$0.014/lb
 - Bato spool \$0.014/lb
 - Vine clips \$0.004/lb
 - Bees for pollination \$0.016/lb
 - Packaging \$0.14/lb
 - Total per lb: \$0.27
- Labor, 2 hours/plant/ year
 - Total per lb: \$0.50
- **Total including materials and labor: \$0.77 per lb**
 - **EXCLUDES HEATING & ELECTRIC COSTS**

	30'x128' Quonset	44'x128' 2-Bay	88'x128' 4-Bay *1/4 acre	176'x128' 8-Bay *1/2 acre	352'x128' 16-Bay *1 acre
Sqft	3,840	5,632	11,264	22,528	45,056
Plant Positions	870	1,440	2,880	5,760	11,520
Yield- 40 lbs/plant annually	34,800	57,600	115,200	230,400	460,800
Gross Revenue 40 lbs@ \$1.50/lb	\$52,200	\$86,400	\$172,800	\$345,600	\$691,200
Gross Revenue 40 lbs@ \$2.00/lb	\$69,600	\$115,200	\$230,400	\$460,800	\$921,600

Prices as of Fall 2014

Seeds

Beefsteak- Foronti, Geronimo, Rebelski, Torero, Big Dena, Trust, Rapsodie, BeOrange (orange)

Prices range from \$97.40- \$191.65 per 250 seeds.

Cluster- Merlice, Komett

Prices range from \$133.55- \$178.20 per 250 seeds.

Roma- Italia, \$144.35 per 250 seeds

Cherry/Cocktail/Grape- DRC 1183, Dasher, DRC 0603, Conchita, DRC 564, Favorita, Red Delight

Prices range from \$100.60- \$339.50 per 250 seeds.

Fertilizer

Components include calcium nitrate, potassium nitrate, mono-potassium phosphate, potassium sulfate, magnesium sulfate, and micro-mix. Battery-strength (28-32%) sulfuric acid is used to lower source water pH to a target level. Most growers opt for a custom recipe, in which fertilizer requirements are calculated based on background nutrient levels.

Growing Media

Rockwool seed starter cube AO36/40- pad of 98 cubes, 30 pads per case (ROC1008)

1-11 cases \$176.57

Rockwool 4 inch DM6-G 42x40 block with 1.5" holes, case of 216 (ROC1019)

1-24 cases \$72.84

Perlite, horticulture coarse grade, 4 cubic foot bags, each bag fills 8 buckets (PER4000)

1-32 bags \$11.00 per bag

33-99 bags \$10.30 per bag

Truss Support

Bato bobbins- 42 foot twine (TOM1015)

1-799 bobbins \$0.50 each

800-3199 bobbins \$0.45 each

7/8 inch Terra Cotta Econo Clips, case of 11,000 (VIN8001)

1-9 cases \$64.00 each
 10-19 cases \$61.00 each

Packaging

10 Pound Open Tomato Box, 19.25”x13”x3.5” box, skid of 500 (BOX1011)
 1000-2499 \$1.40 each
 15 Pound Open Tomato Box, 23”x15”x3.5” box, skid of 520 (BOX3001)
 1040-2499 \$1.55 each

Bees for Pollination

Ordered once flowers on the first cluster are opening on most of the plants in the greenhouse.
 A Class Beehive (15,000 sqft to half an acre)- \$220.00, lasts 12-16 weeks
 B Class Beehive (5,000- 15,000 sqft)- \$128.00, lasts 6-8 weeks
 C Class Beehive (up to 5,000 sqft)- \$78.00, lasts 3-5 weeks

Labor includes crop maintenance: leaf pruning, sucker pruning, leaning and lowering, harvesting, and packaging the fruit.

CropKing Bato Bucket Greenhouse Packages

	30’x128’ Quonset	44’x128’ 2-Bay	88’x128’ 4-Bay	176’x128’ 8-Bay	352’x128’ 16-Bay
Greenhouse Structure and Door	\$6,515	\$19,965	\$35,313	\$66,404	\$128,581
Greenhouse Covering	\$3,055	\$5,316	\$8,459	\$14,715	\$27,224
Plant Support System	\$1,901	\$2,291	\$4,577	\$9,148	\$18,290
Cooling System	\$3,891	\$6,455	\$13,016	\$26,031	\$52,061
Power Vent Door	\$2,730	\$3,366	\$5,215	\$8,477	\$16,945
Air Circulation System	\$1,621	\$3,241	\$6,483	\$12,965	\$25,931
Overhead Unit Heaters	\$4,602	\$8,430	\$15,517	\$30,386	\$60,766
Environmental Controls	\$4,721	\$4,721	\$4,721	\$4,721	\$9,021
Electrical Panel	\$1,695	\$1,985	\$2,925	\$4,865	\$9,730
Grower Tech Service Program	\$1,795	\$1,795	\$1,795	\$1,795	\$1,795
Dutch Bucket System	\$7,861	\$9,954	\$15,700	\$28,170	\$53,185
Testing & Miscellaneous Equip.	\$812	\$1,518	\$1,813	\$2,403	\$4,431
Growing Supplies (approx. 1 year)	\$7,164	\$9,892	\$18,509	\$34,698	\$68,752
Floor Heating System	\$12,585	\$13,633	\$21,786	\$45,950	\$91,899
Shade Cloth System	\$917	\$1,884	\$3,154	\$5,700	\$10,787
Environmental Control Software	\$995	\$995	\$995	\$995	\$995
Insect Exclusion System	\$2,593	\$4,734	\$7,562	\$14,367	\$26,040
Total	\$65,453	\$100,175	\$167,540	\$311,790	\$606,433

Additional Materials for CropKing Bato Bucket Greenhouse Packages

Lumber & Hardware for Framing the Endwalls, the Cooling System
Concrete for Column Posts/Ground Stakes & Plant Support Posts
Gas Heater Plumbing, Vent Pipe
Interior Electrical Wiring Materials, wire Conduit
Perimeter Baseboard and Insulation
Full Floor Concrete, Gravel, Drain Tile, Ground Cover, Forming Lumber, & Labor to Pour Concrete
Estimate Shipping Costs
Building Permits, Estimated
Site Preparation, Estimated
Gas and Water Hookup
Electric Hookup
Hot Water Heater
Packing Table, Picking Cart
Interior Plumbing for Sink, Material
Labor to Erect Greenhouse, \$3.50/sqft
Nutrient Tank to Bury, 1200 gallon per two bays (\$1400 ea.)
Labor for Electrical
Labor for Plumbing & Heating

*Costs vary depending on location.